

What is claimed is:

- 1           1.     A communications system comprising:  
2                 an encoder to encode a digitized speech signal;  
3                 a communication link communicatively coupled to the encoder;  
4                 a decoder communicatively coupled to the encoder via the  
5                 communication link; and  
6                 a short term excitation enhancement circuit in communication with  
7                 the encoder and the decoder.
- 1           2.     The system according to claim 1 where the decoder includes the short  
2                 term excitation enhancement circuit.
- 1           3.     The system according to claim 1 where the short term excitation  
2                 enhancement circuit operates to improve the perceptual quality of speech data for  
3                 reproduction.
- 1           4.     The system according to claim 1 where the system employs eXtended  
2                 code-excited linear prediction.
- 1           5.     The system according to claim 1 where the system employs code-  
2                 excited linear prediction.
- 1           6.     The system according to claim 1 where the short term excitation  
2                 enhancement circuit is distributed between the encoder and the decoder.
- 1           7.     The system according to claim 1 where the short term excitation  
2                 enhancement circuit places at least one pulse, in addition to at least one current  
3                 excitation pulse, within a speech sub-frame.
- 1           8.     The system according to claim 7 where the short term excitation  
2                 enhancement circuit uses a weighted excitation pulse to estimate a location of a  
3                 correlation peak within the speech sub-frame.

1           9.     The system according to claim 8 where the short term excitation  
2 enhancement circuit uses the estimated location of the correlation peak to place the at  
3 least one pulse.

1           10.    The system according to claim 1 where the short term excitation  
2 enhancement circuit performs short term excitation within a pitch lag.

1           11.    A communications system comprising:  
2                   a short term excitation enhancement circuit that improves the  
3 perceptual quality of speech data for reproduction.

1           12.    The system according to claim 11 where the short term excitation  
2 enhancement circuit places at least one pulse, in addition to at least one current  
3 excitation pulse, within a speech sub-frame.

1           13.    The system according to claim 12 where the short term excitation  
2 enhancement circuit uses a weighted excitation pulse to estimate a location of a  
3 correlation peak within the speech sub-frame.

1           14.    The system according to claim 13 where the short term excitation  
2 enhancement circuit uses the estimated location of the correlation peak to place the at  
3 least one pulse.

1           15.    The system according to claim 11 where the short term excitation  
2 enhancement circuit performs short term excitation within a pitch lag.

1           16     The system according to claim 11 where the system employs eXtended  
2 code-excited linear prediction.

1           17.    The system according to claim 11 where the system employs code-  
2 excited linear prediction.

1           18.    The system according to claim 11 where the short term excitation  
2 enhancement circuit is included on a decoder of the communication system.

1           19. A method to perform excitation enhancement on speech data, the  
2 method comprising:

3                 analyzing a coded signal; and  
4                 performing short term excitation enhancement in accordance with the  
5 analyzed coded signal.

1           20. The method according to claim 19 where the analyzed coded signal  
2 includes a past weighted excitation signal.

1           21. The method according to claim 19 where analyzing the coded signal  
2 further includes estimating a location of a correlation function within a current sub-  
3 frame.

1           22. The method according to claim 21 where estimating the location of the  
2 correlation function is based on a past weighted excitation signal.

1           23. The method according to claim 22 further comprising adding a pulse,  
2 in addition to at least one current excitation pulse, to a current sub-frame to produced  
3 an enhanced excitation signal.

1           24. The method according to claim 23 further comprising using the  
2 enhanced excitation signal during the reconstruction of the original speech signal.

1           25. The method according to claim 22 further comprising transmitting  
2 the weighted excitation signal from an encoder to a decoder via a communication  
3 link.

1           26. The method according to claim 19 further comprising performing  
2 code-excited linear prediction to generate the coded signal.

1           27. The method according to claim 19 further comprising performing  
2 eXtended code-excited linear prediction to generate the coded signal.